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EXAMINER	
CHOW, LIXI	

ART UNIT	PAPER NUMBER
2652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,318	AHN ET AL.	
	Examiner	Art Unit	
	Lixi Chow	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 1-20 are pending in this application.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/806107. Although the conflicting claims are not identical, they are not patentably distinct from each other because both set of claims contain recording of recording pattern having multi-pulse and recording of erase patter having multi-pulse. Even though claim 1 and/or claim 4 in Application No. 10/806107 does not recite recording pattern and an erase pattern being alternatively and sequentially formed on the optical recording medium in response to input data having a first level and second level; however, claim 1 of Application No. 10/806107 does recite the forming of recording mark or space on the optical recording medium in response to the recording waveform. Hence, mark and space are inherently formed alternatively and sequentially on the optical recording medium in response to the different level of input data. Also, claims in Application No. 10/806107 does not recite the exact phrase of "cooling pulse as a portion of the first multi-pulse and another portion of the second multi-

pulse"; nevertheless, Application No. 10/806107 does recite "the cooling pulse concatenating the recording and erase pattern", wherein the recording pattern corresponds to the first multi-pulse and erase pattern corresponds to the second multi-pulse. Furthermore, the recording pattern to record mark would have different amplitude in comparison to the amplitude corresponds to the erase pattern, so mark or space can be form on the optical recording medium.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Maeda et al. (US 5,144,601; hereafter Maeda).

Regarding claim 19:

Maeda discloses an apparatus (see Fig. 12) for forming a recording pattern and an erase pattern alternatively and sequentially on an optical recording medium in response to input data having a first level and a second level (see Figs. 3A-3E), respectively, in an optical recording apparatus, comprising:

a recording waveform generating unit (see Fig. 12; the input signal is generated from the recording waveform generating unit) generating a recording waveform which includes a first multi-pulse having a plurality of first pulses to form the recording pattern in response to the first

level of the input data, and a second multi-pulse having a plurality of second pulses to form the erase pattern in response to the second level of the input data (see Fig. 3D; the W represents the first level of input data; and the E represents the second level of input data) and having a power level of a leading one of the second pulses of the erase pattern set to be high level of the second multi-pulses and a power level of a trailing one of the second pulses to be a high level of the second multi-pulses (see Figs. 3D and 3E; the first and last pulse of the multi-pulse erase pattern are at high level).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-5, 9-14, 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara (US 6,396,792).

Regarding claim 1:

Ichihara discloses an apparatus (Fig. 5) for forming a recording pattern and an erase pattern alternatively and sequentially on an optical recording medium in response to input data having a first level and a second level (see Col. 2, lines 53-65), respectively, in an optical recording apparatus, comprising:

a recording waveform generating unit generating a recording waveform which includes a first multi-pulse having a plurality of first pulses to form the recording pattern in response to the first level of the input data and a second multi-pulse having a plurality of second pulse to form

the erase pattern in response to the second level of the input data (see Figs. 1A and Fig. 1B; Fig. 1A shows the NRZI signal waveform corresponding to the length of the recording mark and space; and Fig. 1B shows the waveform of recording pulses).

Ichihara does not specifically show the power level of a leading one of the second pulses of the erase pattern is a low level of the second multi-pulses and a power level of a trailing one of the second pulses of the erase pulse is a high level of the second multi-pulses. However, Ichihara does mention that the power levels for the erase pattern are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-61). This suggests that the power level of the leading pulse of the multi-pulse erase pattern can be at a low power level and the power level of the trailing pulse of the multi-pulse erase pattern can be at a high power level.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have set the power level of the leading and trailing pulse of the multi-pulse erase pattern in various way as suggested by Ichihara. In particular, it would be obvious for a person with an ordinary skill to have modified the power level of a multi-pulse erase pattern, wherein the leading pulse is at low power level and the trailing pulse is at high power level. One would have been motivated to do this, because optimization of erase power level are different among different type of discs and conditions (see Ichihara, col. 11, lines 16-25; one would have to consider the material of the recording layer and the optical property of the laser in order to determine the optimum erase power level); and the importance of forming erase pulses in various

combinations would ensure the entire area in the width direction of the recording track uniformly passes the temperature zone promoting generation of crystal nuclei (see col. 7, lines 1-5).

Regarding claim 2-4:

Claims 2-4 are not amended. Thus, they are not patentable over Ichihara under the same reasons set forth in the last Office Action.

Regarding claim 5:

Ichihara discloses an apparatus (Fig. 5) for forming a recording pattern and an erase pattern (Fig. 1B) alternatively and sequentially on an information storage medium in response to input data having a first level and a second level (see Col. 2, lines 53-65), respectively, in a recording apparatus, comprising:

a recording waveform generating unit generating a recording waveform which comprises multi-pulse corresponding to the second level of the input data, and a cooling pulse concatenating the recording and erase patterns (see Figs. 1A and Fig. 1B; Fig. 1A shows the NRZI signal waveform corresponding to the length of the recording mark and space; and Fig. 1B shows the waveform of recording pulses; the pulse between erase pulse and record pulse corresponds to the cooling pulse).

Ichihara does not specifically show the power level of a leading one of the second pulses of the erase pattern is a low level of the second multi-pulses and a power level of a trailing one of the second pulses of the erase pulse is a high level of the second multi-pulses. However, Ichihara does mention that the power levels for the erase pattern are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level

(see col. 6, lines 58-61). This suggests that the power level of the leading pulse of the multi-pulse erase pattern can be at a low power level and the power level of the trailing pulse of the multi-pulse erase pattern can be at a high power level.

The motivational statement for this claim is the same as the one the provided in claim 1. Hence, refer to claim 1 for the reasons of obviousness to modify the teaching of Ichihara.

Regarding claim 9:

Ichihara further discloses a waveform comprises another recording pattern formed of another multi-pulse (it is inherent that the waveform generating unit of Ichihara is capable of generating another multi-pulse), and the recording waveform generating unit adjusts a first one of the multi-pulses of the another recording pattern to have a power that is other than or equal to a power of a first one of the multi-pulses of the erase pattern (see Fig. 1B, power level Pa is different from the power level of a first one of the mulit-pulses of the erase pattern).

Regarding claim 10:

Ichihara further discloses the power of the first one of the multi-pulses of the erase pattern is equal to the power of the first one of the multi-pulses of the another recording pattern (see col. 6, lines 52-57; Ichihara specifies that if the pulse width of the Pc1 is very short, then the power level of Pc1 may be equal to the power level of the Pa, which is the first one of the multi-pulse of the recording pattern).

Regarding claim 11:

Ichihara further discloses the power of the first one of the multi-pulses of the erase pattern is other than the power of the first one of the multi-pulses of the another recording pattern (see Fig. 1B; power of Pc1 is other than the power of Pa).

Regarding claim 12:

Ichihara further discloses the multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power (see Fig. 1B, the first pulse power is Pc2, and the second pulse power is Pc1).

Regarding claim 13:

Claim 13 recites part of the limitations similar to claim 12, and claim 13 also recites the power of the first one of the multi-pulses of the erase pattern is equal to the first pulse power. Ichihara dose not specifically discloses the power of the first one of the multi-pulses of the erase pattern is equal to the first pulse power. However Ichihara does mention the power levels for the erase pattern are not limited those shown in the figure (see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-61). This suggests that the power level of the leading pulse of the multi-pulse erase pattern can be equal to the first pulse power which is lower than the second pulse power.

The motivational statement for this claim is the same as the one the provided in claim 1. Hence, refer to claim 1 for the reasons of obviousness to modify the teaching of Ichihara.

Regarding to claim 14:

Ichihara further discloses the multi-pulse of the erase pattern has a first pulse power and a second pulse power greater than the first pulse power (see Fig. 1B, the first pulse power is the Pc2 and second pulse power is Pc1), and the power of the first one of the another multi-pulses of the recording pattern is equal to the first pulse power (the power level of the recording pattern to record the first mark is equal to the first pulse power Pc2).

Regarding claims 16-18:

Ichihara further discloses the cooling pulse concatenating and included in the recording and erasing patterns and having a cooling power less than the power of the last pulse of the another multi-pulse of the recording pattern and a power of the first pulse of the multi-pulse of the erase pattern (see Fig. 1B; the cooling pulse is the pulse in between the forming of a mark and space; the cooling power is between Pc1 and Pc2, the last pulse of the recording pattern is at Pa and the first pulse of the erase pattern is at Pc1).

Regarding claim 20:

Claim 20 recites similar limitations as claim 1. Hence, the description of the similar limitations met by Ichihara is omitted here. In addition to claim 1, Ichihara also discloses the trailing pulse of the second multi-pulse is set to be a low level of the second multi-pulses (see Fig. 1B and col. 6, line 62 to col. 7, line 5).

Ichihara does not specifically show the power level of a leading one of the second pulses of the erase pattern is also at a low level of the second multi-pulses. However, Ichihara does mention that the power levels for the erase pattern are not limited to those shown in the figure, i.e. Fig. 1B(see col. 6, lines 35-44). In addition, Ichihara suggests a plurality of power levels lower than the recording level (Pa) are acceptable for setting the erase power level (see col. 6, lines 58-61). This suggests that the power level of the leading pulse of the multi-pulse erase pattern can be at a low power level and the power level of the trailing pulse of the multi-pulse erase pattern can be at a high power level.

The motivational statement for this claim is the same as the one the provided in claim 1. Hence, refer to claim 1 for the reasons of obviousness to modify the teaching of Ichihara.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara in view of Ushiyama et al. (US Pub. No. 2002/0176338; hereafter Ushiyama). For a description of Ichihara, see rejection of paragraph 5, above.

Regarding claim 6:

Ichihara does not, but Ushiyama disclose an apparatus for generating a recording waveform, wherein the pulse of the recording pattern is adjusted according to a pulse of the multi-pulse of the erase pattern (see Ushiyama, paragraph [0049]; the optimized pulse value changes based on the property of the space portion located in the front of the recording pattern).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the generating unit disclosed by Ichihara so that it is being adjusted according to the property of a pulse of the erase pattern as taught by Ushiyama. One of ordinary skill in the art would have been motivated to do this, because the optimum pulse value changes according to the property of the space portion located in front of the recording pattern (see Ushiyama, paragraph [0049]). Essentially, the property of the last one of the pulses of the pattern is crucial in determining the optimum pulse value of the first pulse of the recording pattern.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara in view Clark et al. (US 5,802,031; hereafter Clark). For a description of Ichihara, see rejection of paragraph 5, above.

Regarding claim 7:

Claim 7 recites similar limitations as claim 1. Hence, the description of the similar limitations met by Ichihara is omitted here. In addition to claim 1, Ichihara also discloses a

pickup forming a mark or a space by using the generated recording and erasing waveforms (see Fig. 5, element 13).

Although Ichihara disclose the recording waveform generating unit which receives the input data modulated according to a Run Length Limited (RLL) (2, 10); however, Ichihara does not disclose the input data modulated according to a Run Length Limited (RLL) (1,7). On the other hand, Clark discloses the recording of data using the waveform modulated according to a Run Length Limited (RLL) (1,7) (see Clark, col. 6, lines 51-59).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have adopted the method of recording data according to a Run Length Limited (RLL) (1,7) in the recording waveform generating unit of Ichihara as taught by Clark. One of ordinary skill in the art would have been motivated to do this, because recording of marks and spaces of length 2T to 8T for standard M-O recording system is possible (see Clark, col. 6, lines 51-59). Hence, recording of marks or spaces amongst different types of recording format can be achieved.

Regarding claim 8:

Claim 8 recites similar limitation as claim 7. Therefore, it is rejected under the same reason set forth in claim 7, above.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara in view of Tanaka et al. (US 5,825,742; hereafter Tanaka). For a description of Ichihara, see the rejection of paragraph 5, above.

Regarding claim 15:

Ichihara does not disclose a multi-pulse recording pattern comprising a recording pulse having a power greater than the power of the first one of the pulses of the recording pattern. However, Tanaka discloses a multi-pulses recording pattern comprising a recording pulse having a power greater than the power of the first one of the pulses of the recording pattern (see Tanaka, Fig. 8, Pw2 is greater than the first pulse of the multi-pulses recording pattern).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have adopted the method taught by Tanaka for recording information having a recording power higher than the power of the first one of the pulses of the multi-pulses recording pattern in the medium provided by Ichihara. One would be motivated to do this, so edge shift and jitter of the recording mark can be suppressed (see Tanaka, col. 4, lines 1-22).

Response to Arguments

Applicant's arguments filed 11/10/05 have been fully considered but they are not persuasive.

I. Applicant argues Ichihara does not discloses or suggest, "a power level of a leading one of the second pulses of the erase pattern is a low level of the second multi-pulse and a power level of a trailing one of the second pulses of the erase pulse is a high level of the second multi-pulses". However, Examiner respectfully disagrees. Although Ichihara does not specifically illustrate in the figures showing the leading pulse of the multi-pulse is at the low power level and a trailing pulse of the multi-pulse is at the high power level. Nevertheless, Ichihara does suggest that plurality of other power levels other than the Pc1 and Pc2 are acceptable for setting as erase power levels (see col. 6, lines 35-61). Given with such suggestion, it would be obvious for a person of ordinary skill in the art to carry out various combination of power level for the leading

pulse and the trailing pulses of the multi-pulse erase pattern, thereby capable of determining the optimum erase pattern level for plurality of discs having different recording conditions. Since Ichihara shows the recording and erasing of information that would improve the overwrite erasability of the optical recording medium, one would be motivated to try the different combination of the erase power in order to achieve that goal. Accordingly, claim 1 and other independent claims having similar limitations are not patentable over Ichihara.

II. In response to Applicant's argument on "Ichihara does not discloses or suggest the invention as recited in claim 2". It is respectfully submitted that claim 2 is rejected based on Fig. 1B of Ichihara in the previous Office Action, not Fig. 1C. The cooling pulse is the pulse between multi-pulse erase pattern and multi-pulse recording pattern, which would inherently include a portion of the multi-pulse erase pattern and another portion of the multi-pulse recording pattern. Accordingly, claim 2 is not patentable over Ichihara.

III. Applicant's arguments with respect to claims 7-20 have been considered but are moot in view of the new ground(s) of rejection.

IV. In regards to double patenting, rejection under provisional obviousness type double patenting is maintained. Since Application 10/806107 has been amended to include similar new claims as current Application, provisional obviousness type double patenting is also applicable to the new claims.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LC 1/22/06

ANDREA WELLINGTON
SUPERVISORY PATENT EXAMINER